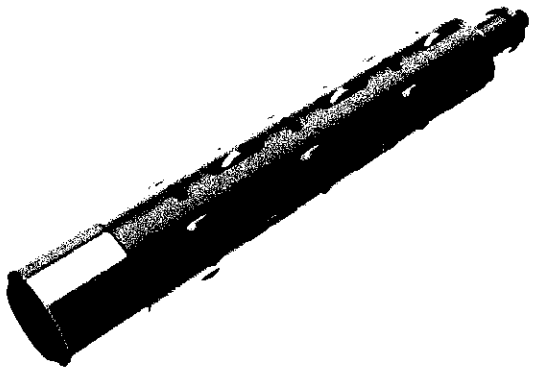
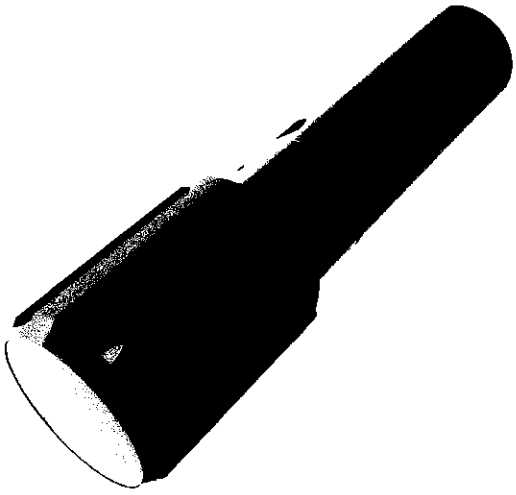
Handling and Operational Procedure

INNOVAR

Fishing Magnets





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1. Introduction

This procedure is an information and maintenance guide for personnel involved in the use of fishing magnets.
Innovar fishing magnets are equipped with a special strong magnet, specially designed for Innovar. These magnets produce an extreme magnetic field that, due to specific precautions taken in the design, is retained in temperatures up to 160 deg. C.
These particular magnets can lift in excess of 2800 kg depending on size and model.
INNOVAR fishing magnets are used for fishing lost debris in any oil and gas well. The different models and sizes make a tool for every application. The tools can be used beyond its maximum rated temperature, but the efficiency will be lower. Under no circumstances should the magnets be heated to above 300° C.

2. Application

The INNOVAR fishing magnet is designed primarily for fishing single objects and hence the main magnetic field is focused downwards. Depending on the specific model, some magnetic field is also acting sideways, generating friction against the tubing wall. To compensate for this, these wireline models are equipped with rollers. Maximum available weight bars, preferably with rollers, are recommended for the WL tool string.
The powerful magnet element will pick up any ferrous debris that may exist in the well, and ferrous material isolates the magnetic field. It is therefore recommended to run clean up trips prior to the fishing job. Innovar provides magnets specifically designed for this purpose. These magnets are designed to pick up larger masses of small particles rather than one heavy object.

3. Safety

The tool has a very strong magnetic field, and will seek any ferrous material in its vicinity.

Extreme caution should be taken not to get any human body parts in between the magnet and surrounding ferrous material.

WARNING: All personnel using a pacemaker or similar must keep clear of magnets.

Keep cell phones, credit cards, radios or other elements that may be damaged by a magnetic field at safe distance from the fishing magnet.

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Fishing Magnets

4. Shipping

All equipment should be packed in suitable boxes or baskets to avoid damage to equipment and minimize the magnetic field. Magnets with OD below 6 inch are usually packed in a Pelicase, and this box shall be used throughout the magnets lifetime. The magnets shall always have a protector covering the actual magnet and a "Strongly Magnetic" sticker applied during transport.

Shipping by air transport

The magnetic field is a concern for transport by air and shielding is needed to minimize the magnetic field. All boxing of magnets shall be in compliance with IATA 902 regulations.

Shipping by sea or land transport

The magnetic field is normally not a concern for transportation by land or sea. Hence, packing for damage protection is normally sufficient.

NOTE: Always inform your shipping agent about magnetic goods.

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Fishing Magnets

5. Field handling guidelines

When Innovar fishing magnets are sent to the location, they are properly protected to ensure that the magnets do not get damaged or catch debris in transit.

Always adhere to the safety precautions in this procedure to avoid personnel injury or equipment damage.

Handling before run in hole

- Keep front of magnet at least 50 cm from any ferrous material.
- Do not remove the magnet protector before the magnet is made up to the string.
- Pay extra attention at the wellhead entry.
- Make up the magnet according to the table below
- Remove any debris from the magnet before running in the hole.

Fishing Magnet make-up torque

Connection	Make-up torque [ft-lbs]
Sucker Rod for wireline tools	Hand tight
1,5" AMMT	700
2 3/8" PAC DSI	2500
2 3/8" Reg	2 800
NC 38 (3 ½" IF)	11 000
NC 50 (4 ½" IF)	26 000

During fishing

- Put only as much weight as is required to make sure the magnet is onto the fish. The more weight, the higher is the risk of jamming the fish stuck.
- **Never rotate the string with weight on the magnet.**
- Slug can be pumped as the circulation holes in the fishing magnet are above the magnet face, but limit pumping only to what is required.
- POOH carefully. Do not rotate the string. Set slips with caution.

Post job handling

- Remove fish/debris from magnet.
- Check magnet for any loose parts.
- Clean with fresh water.

Packing Prior to Back Loading

The tool shall be protected using the same packaging that was supplied with the tool.

Fishing Magnets

6. Storage

- For long-term storage, the magnet should be stored in a dry place with all non stainless steel surfaces protected against corrosion with light oil/grease/paint or similar and the threads properly coated with pipe dope.
- Keep the thread and the magnet protectors on.
- Never let the magnet rest on a magnetic/ferrous surface.
- Separate magnets from each other.

7. Maintenance

A fishing magnet is not a tool that in normal operation is being exposed to any stressful operation, it simply lowered in the well and retrieved.

1. Thoroughly wash and clean the magnet and visually inspect for wear or damage. Pay particular attention to the magnet element in front.
2. Report any damages.
3. If the magnet is not physically damaged or eroded, or has been exposed to excess heat, it will retain minimum 95% of the original magnetic force. If in doubt about a magnet's actual strength, perform a lift test to confirm the magnetic properties.
4. Check condition of guide wheels if present. Make sure they are free to rotate.
5. Wire line magnet.

   Visually inspect the SR thread connection. The thread is a hand tight thread that will not be exposed to excess stress and therefore no MPI should be required under normal operation. If visual inspection or abnormal use is reported a MPI inspection should be carried out. Apply thread compound and thread protection.
6. DP magnet.

   Visually inspect the API thread connection. Make sure there are no damages to the seal area or threads. Carry out thread inspection according to known industrial standard or client requirements if any. If rejected by inspector re-cut of thread is required. Apply thread compound and install thread protector.
7. Repair any small defects (e.g. burrs, small deformations) with a file or other hand tool.
8. Apply protective coating to magnet element if rusted. Ensure that the stamped serial numbers are easily read (re-stamp if required).

9. Attach Data sheet, Equipment service rapport and Fishing Magnets Field Safety & Handling to the magnet and store the tool ready for use.
10. Complete a green "Ready for Use" label with the date, serial number and tool model number. Attach this label to the tool and store ready for use.

8. Technical Information

Refer to https://www.innovar.no/fishing-and-well-cleaning-products for an updated product data sheet including relevant technical information.